Institute of Microelectronics of Barcelona IMB-CNM (CSIC)

Postdoctoral researcher in Memristive Devices

The postdoctoral researcher will work within **PaNeTONE**, a project focused on developing a new generation of memristive devices for analogue and in-memory computing. The research explores how device geometry and materials engineering can be used as design parameters to achieve improved stability, reproducibility and energy efficiency in oxide-based nanoelectronic devices.

The work combines nanofabrication, electrical characterization and device physics to understand and control behaviour at the nanoscale. The project addresses emerging applications in neuromorphic hardware, edge AI and hardware security, and offers the opportunity to work in a collaborative environment with access to advanced cleanroom and characterization facilities.

IMB-CNM is the largest institute in Spain dedicated to research and development of Micro and Nanotechnology and microsystems, with unique capabilities in silicon technology. It belongs to CSIC since its foundation in 1985 and is distinguished with the AEI María de Maeztu Unit of Excellence accreditation.

The main activities of IMB-CNM are basic and applied research and development, as well as education and training in micro and nanotechnologies, components and systems. Its mission is to improve knowledge and contribute to the development of technology-based solutions to address societal challenges.

Key Responsibilities

- Fabrication and processing of nanoscale electronic devices using **cleanroom micro- and nanofabrication techniques**.
- Electrical characterization of devices, including **DC and pulsed measurements**, statistical analysis, and long-term stability tests.
- Analysis of device behaviour in relation to **material properties, nanostructure and defects.**
- Participation in **correlative studies** combining electrical data with nanoscale structural or chemical characterization (in-house and through collaborations).
- Contribution to scientific publications and presentations at international conferences.

The postdoctoral researcher is expected to work autonomously in the laboratory, while interacting closely with the rest of the team.

Required skills

- PhD in **Physics, Materials Science, Nanotechnology, Microelectronics**, or a closely related field.
- Hands-on experience with cleanroom processing (thin films, ALD, EBL, lithography, etching).
- Experience in nanoelectronic or microelectronic device fabrication.

- Strong experimental background and interest in device physics.
- Ability to work independently and as part of a collaborative team.
- Good written and oral communication skills in English.

Preferred Experience

- Oxide-based electronic devices (e.g., memristive devices or related resistive switching technologies).
- Electrical characterization, including DC and pulsed measurements.
- Variability, reliability, and noise analysis.
- Nanoscale characterization techniques (AFM, c-AFM, SEM/TEM).
- Layout design tools (KLayout, Cadence).
- Device simulation (TCAD).
- Software development for electrical measurements (Python, MATLAB, C++).

Job conditions

- Full-time postdoctoral contract (full time, 40 hours/week) for two years.
- Gross salary: 49,062.72 €/year (Doctor FC2 level, according to CSIC salary scales).
- On site work, with the possibility of teleworking and flexible schedule.
- Estimated start date: September - October 2026

How to apply

Applications should be sent by email to: m.f.regulez@csic.es and mireia.bargallo.gonzalez@csic.es

Please include “Postdoctoral researcher in Memristive Devices” as the subject of the message and attach:

- A brief statement of research experience and interest.
- Two recommendation letters.
- An updated CV.

Submitting the application implies consent to the Legal Advice | IMB CNM (csic.es).

Deadline for applications: 15/06/2026.

This offer can be found on: https://www.imb-cnm.csic.es/en/about-center/careers/open-positions.

More information on IMB-CNM: https://www.imb-cnm.csic.es/en/